V.10 Linear Search Algorithm →

arr [18, 12, 9, 14, 77, 50]
0 1 2 3 4 5

Q Find whether 14 exists in the array or not.

"Linear Search is simply traversing the list completely and match each element of the list with the item whose location is to be found."

Time Complexity → ✱ Best Case - O(1)
✱ Worst Case - O(n)

```
{
int[] nums = {23, 14, 17, 19, 1, 20, 98, 10, 15}
int target = 10;
int ans = linearSearch (nums, target);
Sout (ans);
}

Static int linearSearch (int[] arr, int target)
{
    if (arr.length == 0)
        {
            return -1;
        }
    for (int index = 0; index < arr.length; index++)
        {
            int element = arr[index];
            if (element == target)
            {
                return index;
            }
        }
return -1;
}
```

(*) Search in String :

```
{   String name = "Ronit";
    char target = 'n';
    sout (search (name, target));
}

static boolean search (String str, char target)
{
    if (str.length() == 0)
        { return false;
        }
    for (int i = 0; i < str.length(); i++)
        {
            if (target == str.charAt(i))
            {
                return true;
            }
        }
    return false;
}
```

(*) Find Min / Max :

// Function only.

```
static int min (int [] arr)
{
    int ans = arr[0];
    for (int i = 1; i < arr.length; i++)
    {
        if (arr[i] < ans)
        {
            ans = arr[i];
        }
    }
    return ans;
}
```

(*) Search in 2D arrays :

```
{
    int [ ] [ ] arr = {
                        { 23, 4, 1 }
                        { 18, 12, 3, 9 }
                        { 78, 99, 34, 56 }
                        { 18, 12 }
                      };
    int target = 34;
    ~~sout (search (arr, target));~~
    int[] ans = search (arr, target);
    sout (Arrays. to String (ans));
}
static int search ( int [ ] [ ] arr, int target)
    {
    for ( int row = 0; row < arr. length ; row ++)
      {
        for (int col = 0; col < arr [row]. length ; col++)
        {
          if ( arr [row] [col] = = target)
            {
              return new int [ ] { row, col};
            }
        }
      return new int [ ] {-1, -1};
      }
    }
```